selected from the first and second weighting coefficients, using the motion vector detected by the motion prediction circuit.

The image encoder may further comprise

a frame memory which stores the input image frame which has been divided into the plurality of blocks by the frame divide circuit, and

wherein the motion prediction circuit compares each of the plurality of blocks with blocks included in a previously-input image frame stored in the frame memory so as to detect the motion vector.

In the image encoder, the weighting coefficient calculation circuit may:

set the first weighting coefficient as a weighting coefficient for determining the quantization step width, in a case where the motion vector is detected by the motion prediction circuit; and

set the second weighting coefficient as a weighting coefficient for determining the quantization step width, in a case where the motion vector is not detected by the motion prediction circuit.

In the image encoder,

the weighting coefficient calculation circuit may set a product of the first and second weighting coefficients as a weighting coefficient for determining the quantization step width, in a case where the motion vector is detected by the motion prediction circuit.

According to this structure, even in the case where the input image is moving in its entirety, each portion of the display screen can be classified based on the brightness or color information, so that the important portion thereof can be encoded in a high level of preciseness.

In the image encoder,

the weighting coefficient calculation circuit may calculate the first weighting coefficient, based on number of blocks included in the one or more groups classified by the first grouping section.

In the image encoder,

the weighting coefficient calculation circuit may calculate the second weighting coefficient based on a distance between center of each block, included in each group of the one or more groups classified by the second grouping section, and center of the input image frame.

In the image encoder:

the motion vector based grouping section may classify the plurality of blocks into groups, in such a way that each of the groups forms a continuous portion of the input image frame; and

the DC component based grouping section may classify the plurality of blocks into groups, in such a way that each of the groups forms a continuous portion of the input image frame.

That is, even in the case where two portions of the input image have the similar motion, color, brightness, etc., those two portions are classified into different two groups. Thus, even in the case where two different persons have the similar motion in the display screen, portions of the input image which may correspond to the face part, hair part, etc. of the two different persons are arranged into different groups, and only the portion corresponding the important person can be encoded in a high level of preciseness.

In the image encoder,

the weighting section may include a weighting coefficient re-calculation circuit which re-calculates a weighting coefficient using the first and second weighting coefficients calculated by the weighting coefficient calculation circuit and each of a plurality of previous weighting coefficients, and

the quantization step width calculation circuit may determine the quantization step width based on the re-calculated weighting coefficient.

Having re-calculated the previously-calculated weighting coefficients, even if a calculated weighting coefficient is an inappropriate value as a result of undesirable

grouping, no serious problem should occur.

The image encoder may further comprise:

an encoding circuit which encodes the data quantized by the quantization circuit and data representing the motion vector detected by the motion prediction circuit into a variable-length code;

a transmission buffer which stores the data which is encoded into the variable-length code by the encoding circuit; and

a buffer storage amount checking circuit which checks an amount of data stored in the transmission buffer, and

wherein the quantization step width calculation circuit calculates the quantization step width based on the data amount checked by the buffer storage amount checking circuit and the weighting coefficient for determining the quantization step width.

In order to achieve the above objects, according to the third aspect of the present invention, there is provided a computer readable recording medium which records a program for controlling a computer to execute:

dividing an input image frame into a plurality of blocks;

detecting a motion vector of each of the plurality of blocks;

classifying the plurality of blocks into one or more groups, according to one or two grouping method selected from motion vector based grouping based on the value of the detected motion vector and DC component based grouping based on DC components of brightness and color information of each block;

calculating a first weighting coefficient of the one or more groups in a case where the plurality of blocks are classified according to the motion vector based grouping, and calculating a second weighting coefficient of the one or more groups in a case where the plurality of blocks are classified according to the DC component based grouping; and

quantizing each of the plurality of blocks by a quantization step width determined based on the first or second weighting coefficient.